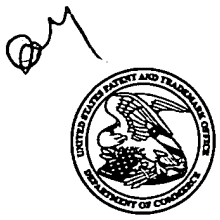

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/650,764	OHTA, TADASHI	
	Examiner	Art Unit	
	Aung S. Moe	2612	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 October 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *4-30,45,46 and 48-52* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *4-30,45,46 and 48-52* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 October 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 10/22/2004 have been fully considered but they are not persuasive.

With regard to the reference of Kijima '451, the Applicant alleged "in Claim 4, a timer determines a time length from a start of the accumulation of charge to a time when a signal from the image sensor reaches a predetermined level. Based on this calculated time length, light metering is performed. In other words, when a charge level reaches a predetermined level at 1/512 sec, for example, 1/512 sec is used. Kijima '451 fails to discloses this feature because Kijima '451 fails to set light metering based on a determined time length."

In response, the Examiner respectfully disagrees because it is cleared form the Applicant's own admission (i.e., page 10 of the last paragraphs of the remarks) that "Kijima '451 discloses an imaging apparatus that performs an automatic exposure AE (i.e., light metering as clamed) calculation that is based on an electric charge level that is accumulated in one frame as a unit (i.e., the Exposure time length of 1/60 sec is used for AE operation)." In view of this, it is cleared that Kijima '451 clearly discloses the use of a timer (i.e., noted the elements 20, 22 and 24) for determining a time length for the CCD 12 to accumulate the charges therein, so that when a charge level reaches a predetermined level at 1/60 sec, in this case, 1/60 sec is used "a predetermined level" and the light metering (AE) operation is set based on this determined time length of 1/60 sec.

In view of the above, Kijima '451 clearly discloses all of the features recited in claim 4 (i.e. the Examiner noted the addition feature as amended in claim 4, for example, as shown in

Figs. 4-10, that during the high speed reading, the number of the image pixels selected for processing AE is less than the whole pixels from the imaging area of the image sensor, thus, it is cleared that the area used for AE is narrower than the whole imaging area of the image sensor as claimed; see Fig. 7 in particular), and for this reasons, the Examiner will maintain the rejection of claims 4-5, 14-15, 19-21, and 25-26 under 35 U.S.C. 102(e) as being anticipated by Kijima '451, and obvious over the other cited references as applied to claims discussed below.

Regarding claim 48, the Applicant alleged (in page 11 of the remarks) that, in claim 48, one process is started after the output of the signals is completed for another process, and Kijima '451 fails to show these features.

In response, the Examiner respectfully disagrees because in order to complete the specific process (i.e., AE process), the output of the signals form the CCD sensor 12 has to be completed. Since, Kijima '451 clearly shown in Figs. 12-15 that the one process (AF/AWB) is started in response to completion of outputting the n-lines signals for another process (AE/AF). In other words, the AF process is started in response to completion of outputting the n-lines signals for the dynamic image from the CCD sensor 12 used for the AE process is completed.

In view of the above, the Examiner asserts that Kijima '451 clearly discloses the present claimed invention as recited in claim 48, and the previous rejection is proper.

Regarding claim 45, the applicant's arguments with respect to claim 45 have been considered but are moot in view of the new ground(s) of rejection (i.e., see rejection below).

Regarding claim 45, the applicant argues that Hata '801 fails to show "the image sensor having a plurality of amplifiers of variable gain for amplifying the signals of the pixels,

respectively, as recited in claim 46, because a VG amplifier 104 and a digital gain control module 1075 are not a gain amplifiers located in a single image sensor."

In response, the Examiner respectfully disagrees because the present claimed invention never limit that "a plurality of amplifiers of variable gain for amplifying the signals of the pixels" located in a single image sensor as alleged by the Applicant. In fact, the present claimed invention broadly stated that "the image sensor having a plurality of amplifiers of variable gain for amplifying the signals of the pixels" and Hata'801 discloses these limitations. In particular, Hata '801 shows in Figs. 1 and 2 that the image sensor 103 having a plurality of amplifiers of variable gain for amplifying the signals of the pixels (i.e., noted the VC AMP 105 and Digital Gain control 1075 as shown in Figs. 1 and 2 are amplifying the pixels from the sensor 103).

In view of the above, the Examiner continues to opinion that Hata '801 does in fact show all the limitations as recited in claim 46.

With respect to claims 4, 14-16 and 48 rejected under Hieda '488, the applicant's arguments with respect to claims 4, 14-16 and 48 with respect to Hieda '488 have been considered but are moot in view of the new ground(s) of rejection (i.e., see rejection below).

With respect to claims 4-14, 17-18, 22-24 and 45 rejected under Suzuki 354, the applicant's arguments with respect to claims 4-14, 17-18, 22-24 and 45 with respect to Suzuki 354 have been considered but are moot in view of the new ground(s) of rejection (i.e., see rejection below).

Applicant's arguments with respect to claims 49-52 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 4-5, 14-15, 19-21, 25-26, 48, 49 and 50-51 are rejected under 35 U.S.C. 102(e) as being anticipated by Kijima et al. (U.S. 6,661,451).

Regarding claim 4, Kijima '451 discloses a digital camera (Fig. 1), comprising: an image sensor (i.e., the sensor 12; see Figs. 7 and 11) having a plurality of two-dimensionally arranged pixels on which electric charge is accumulated to generate signals, respectively, capable of selectively reading out the signals from desired pixels (i.e., noted the selective reading process as shown in Figs. 6, 7, 9, 10; see col. 7, lines 25+), and

a processor for light metering (i.e., Auto Exposure) read signals of given pixels located in a given area narrow than the whole image area of the image sensor (i.e., as shown in Figs. 4-10, that during the high speed reading, the number of the image pixels selected for processing AE is less than the whole pixels from the imaging area of the image sensor, thus, it is cleared that the area used for AE is narrower than the whole imaging area of the image sensor as claimed; see Fig. 7 in particular), and

including a timer for determining a time length (i.e., noted that the elements 20, 22 and 24 are capable of determining the time length required to control the exposure timing/time of the CCD sensor 12) from a start of the accumulation of charge to a time when a signal from the image sensor reaches a predetermined level (i.e., as shown in Fig. 1, the elements 20, 22 and 24 functioned as a timer for determining the charge accumulation time, e.g., 1/45, 1/30, 1/10 or 1/60 second, of the image sensor reaches a predetermined level such that one frame of "n/q" lines of the added signals to calculate for AE; see col. 10, lines 45-68, col. 11, lines 40+ and col. 13, lines col. 14, lines 15+), the light metering being on the basis of the time length (i.e., noted that the AE is calculated for the time period of 1/60 second as discussed in col. 14, lines 15+).

Regarding claim 5, Kijima '451 discloses wherein the image sensor is further capable of adding signals of at least two pixels prior to getting the output from the image sensor (i.e., noted from Fig. 7 that the at least the pixels GA and GC are added before outputting from the image sensor 12), and wherein the timer (i.e., the timing control circuits 20, 22 and 24) determines a time length from a start of the accumulation of charge to a time when the added signals reaches a predetermined level (i.e., noted that the time control circuits 20, 22 and 24 are capable of determining a predetermined time length, e.g., 1/45, 1/30, 1/10 or 1/60 second, when the added signals reaches a predetermined level such that a frame of image data; see col. 3, lines 45+, col. 8, lines 30+, col. 10, lines 45-68, and col. 14, lines 15+).

Regarding claim 14, Kijima '451 discloses further comprising a focus detector for processing the signal of the image sensor to detect the focusing condition of the camera (i.e., see col. 14, lines 15+).

Regarding claim 15, Kijima '451 discloses wherein the focus detector processes the outputs from the individuals of the pixels of the image sensor to form a digital image to be investigated in the focus direction (i.e., noted the AF process as shown in Figs. 4-10, and 12-15; col. 13, lines 5+, col. 14, lines 15+).

Regarding claim 19, Kijima '451 discloses wherein the image sensor is further capable of adding signals of at least two pixels prior to getting the outputs from the image sensor (i.e., noted the adding of at least two "n/q" pixels sensor as shown in Figs. 7 and 9-10 respectively), and wherein the focus detector processing the added signals when the light metering informs an insufficient brightness of an object in terms of the focus detection (i.e., as shown in Figs. 13-15, the added signals are used during the processing of the AF and AE, thus, it is cleared that AE calculating is capable of informing an insufficient brightness of the object in terms of the AF detection; col. 14, lines 25+ and col. 15, lines 5+).

Regarding claim 20, Kijima '451 discloses wherein the addition means the simple addition of signals from more than two pixels adjacent with each other (i.e., col. 15, lines 10-15).

Regarding claim 21, Kijima '451 discloses wherein the addition means the moving addition of signals from more than two pixels adjacent with each in which the pixels is shifted by one on every addition (i.e., Figs. 9 and 10; col. 10, lines 45+ and col. 11, lines 5+).

Regarding claim 25, Kijima '451 discloses comprising a memory for storing the signals from the image sensor to form a picture image of an object of the camera and a white balance calculator for processing the signals stored in the memory (i.e., see col. 14, lines 15+).

Regarding claim 26, Kijima '451 discloses wherein after accumulation of charge for light metering (AE), the calculation for white balance (AWB) is performed, and the output of the pixel is got from the image sensor for focus detection (i.e., col. 14, lines 35+ and col. 15, lines 5; Figs. 13-15).

Regarding claim 48, Kijima '451 discloses a digital camera (Fig. 1) comprising: an image sensor having a plurality of two-dimensionally arranged pixels capable of selectively reading out signals from desired pixels (i.e., Figs. 7 & 9-15; col. 3, lines 20+, col. 12, lines 15+, and col. 13, lines 15+) for the purpose of **at least two** of the processes for light metering (AE), focus detection (AF), white balance calculation (AWB) and picture image forming (i.e., Still image as shown in Figs. 13-15), and wherein one process is started in response to completion of outputting the signals for another process (i.e., noted from Figs. 13-15, it is noted that one of the AF, AWB, AE and Still image process is started in response to completion of outputting the signals for another processes as claimed).

Regarding claim 49, Kijima '451 discloses a digital camera (Fig. 1), comprising: an image sensor (i.e., the sensor 12) having a plurality of two-dimensionally arranged pixels capable of selectively reading out signals from desired pixels and capable of adding signals of at least two pixels prior to getting the output from the image sensor (i.e., noted the selective reading process as shown in Figs. 6, 7, 9, 10; see col. 7, lines 25+);

a first processor for processing outputs got from the individuals of the pixels of the image sensor to form a picture image of an object of the camera (i.e., noted the image processing circuit 26 for processing all pixels reading as discussed in col. 3, lines 25+); and

a second processor for processing the added signals of the image sensor for light metering of the object (i.e., noted the image processing circuit 26 for processing a high speed dynamic image data for an automatic exposure adjustment as discussed in col. 13, lines 60+);

wherein the second processor for light metering processes (i.e., AE processing unit of the system 26) the added signals (i.e., see Fig. 7) obtained by adding signals of given pixels located in a given area narrower than the whole imaging area of the image sensor (i.e., as shown in Figs. 4-10, that during the high speed reading, the number of the image pixels selected for processing AE is less than the whole pixels from the imaging area of the image sensor, thus, it is cleared that the area used for AE is narrower than the whole imaging area of the image sensor as claimed; see Fig. 7 in particular).

Regarding claim 50, Kijima '451 discloses a digital camera (Fig. 1), comprising: an image sensor (i.e., the sensor 12) having a plurality of two-dimensionally arranged pixels capable of selectively reading out signals from desired pixels and capable of adding signals of at least two pixels prior to getting the output from the image sensor (i.e., noted the selective reading process as shown in Figs. 6, 7, 9, 10; see col. 7, lines 25+);

a first processor for processing outputs got from the individuals of the pixels of the image sensor to form a picture image of an object of the camera (i.e., noted the image processing circuit 26 for processing all pixels reading as discussed in col. 3, lines 25+); and

a second processor for processing the added signals of the image sensor for light metering of the object (i.e., noted the image processing circuit 26 for processing a high speed dynamic image data for an automatic exposure adjustment as discussed in col. 13, lines 60+);

wherein electric charge is accumulated on the pixels of the image sensor (i.e., noted the charges accumulated by the sensor 12 of the camera as shown in Fig. 1) to generate the outputs to be got, and wherein the second processor (i.e., the AF, AE and WB processing; see col. 13, lines 60+) includes a timer for determining a time length from a start of the accumulation of charge to a time when the added signal reaches a predetermined level (i.e., as shown in Fig. 1, the elements 20, 22 and 24 functioned as a timer for determining the charge accumulation time length, e.g., 1/45, 1/30, 1/10 or 1/60 second, of the image sensor reaches a predetermined level such that one frame of "n/q" lines of the added signals to calculate for AE; see col. 10, lines 45-68, col. 11, lines 40+ and col. 13, lines col. 14, lines 15+) the light metering being in accordance with the time length (i.e., noted that the AE is calculated for the time length of 1/60 second as discussed in col. 14, lines 15+).

Regarding claim 51, Kijima '451 discloses a digital camera (Fig. 1), comprising: an image sensor (i.e., the sensor 12) having a plurality of two-dimensionally arranged pixels capable of selectively reading out signals from desired pixels and capable of adding signals of two-dimensionally arranged at least three pixels prior to getting the output from the image sensor (i.e., noted the selective reading process by adding signals of two-dimensional sensor arranged in at least three pixels as shown in Figs. 6, & 7; see col. 7, lines 25+); a processor for processing outputs got from the individuals of the pixels of the image sensor to form a picture image of an object of the camera (i.e., noted the image processing circuit 26 for processing all pixels reading as discussed in col. 3, lines 25+); a white balance calculator (i.e., noted the AWB calculated by the elements 26 and 24; see Figs. 1 and 12-15) for processing the added signals of the image sensor in accordance with all of a same kind of color filters (i.e., noted adding of same color

filters used for a AWB processes as shown in Figs. 7 and 12-15), respectively, generated before outputting from the image sensor (i.e., noted from Fig. 7 that the signals are added before output to the horizontal output register from the image sensor).

3. Claims 45 and 52 are rejected under 35 U.S.C. 102(e) as being anticipated by Hieda et al. (U.S. 6,353,488).

Regarding claim 45, Hieda '488 discloses a digital camera (i.e., Fig. 1) comprising: an image sensor (i.e., Fig. 1, the element 5) having a plurality of two-dimensionally arranged pixels capable of selectively reading out signals from desired pixels (i.e., noted the selective reading of the desired pixels as shown in Figs. 3, 4, 6, 7 & 9) for the purpose of **at least two of** the processes for light metering (i.e., noted the AE processing 124 as shown in Figs. 1, 12 and 14), focus detection (i.e. noted the AF processing 123 as shown in Figs. 1, 12 and 13), white balance calculation and picture image forming (i.e., noted the AWB processing 125 as shown in Figs. 1, 12 and 18); and

an output reader for getting the outputs from the pixels (i.e., noted the output read out circuit 10 as shown in Fig. 1) for the purpose of at least two processes (i.e., AE, AF and AWB as shown in Fig. 12-15 and 18-19), after signals of the pixels are output for a first process (i.e., noted that the CCD sensor is reset and outputting the signals to the elements 10 to perform one of the process, e.g., the AF process; see col. 5, lines 30), by outputting signals of the pixels continuously formed without being reset for the purpose of at least a second process (i.e., noted that the CCD sensor is reset to output the image signals to the device 10, and AF, AE and AWB process are performed consecutively without being reset the CCD sensor between the AF, AE

and AWB process once the signals of pixels are outputted form the CCD sensor; col. 6, lines 55-68, col. 10, lines 25+, and col. 11, lines 10+).

Regarding claim 52, Hieda '488 discloses a digital camera (Fig. 1) comprising: an image sensor (i.e., CCD 5) having a plurality of two-dimensionally arranged pixels capable of selectively reading out signals (i.e., see Figs. 3, 4, 6, 7 and 9) from desired pixels; a processor for processing outputs from the pixel of the image sensor to form a picture image of an object of the camera (i.e., noted the processor 10 process the image signals from the sensor 5 to form a picture as shown in Fig. 1); and a white balance calculator that processes (i.e., noted the AWB processor 125), after completion of reading out for the process of the processor (i.e., noted that the AWB processor is performed after the image signals are read out for the process in the processor elements 101-108), signals read out from the pixels of the image sensor without resetting the signals of the image sensor (as shown in Figs. 12, the AWB process is performed after the image signals have been read out form the sensor, thus, no resetting is required when the AWB is calculated on the output image signals) which have been read out for the process of the processor (i.e., noted the elements 101-108 of the processor 10).

4. Claim 46 is rejected under 35 U.S.C. 102(e) as being anticipated by Hata (U.S. 2004/0061801 A1).

Regarding claim 46, Hata '801 discloses a digital camera (Fig. 1) comprising: an image sensor having a plurality of two-dimensionally arranged pixels (i.e., Fig. 4; col. 4, paragraphs 0039+) capable of selectively reading out signals from desired pixels (noted the selective reading

of the desired pixels as shown in Fig. 5-7) for the purpose of **at least two** of the processes for light metering (AE; page 3, paragraphs 0032+), focus detection (AF; page 3, paragraphs 0032+), white balance calculating (i.e., page 3, paragraphs 0032+) and picture image forming (page 3, paragraphs 0035+); the image sensor having a plurality of amplifiers of variable gain for amplifying the signals of the pixels (i.e., noted the VC AMP 105 and Digital Gain control 1075 as shown in Figs. 1 and 2), respectively; and a gain controller for changing the gain between at least two processes (i.e., page 5, paragraphs 0052-0054).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 4, 14, and 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hieda '488 in view of Yamaguchi et al. (U.S. 6,342,921).

Regarding claim 4, Hieda '488 discloses a digital camera (Fig. 1), comprising: an image sensor (i.e., the sensor 5) having a plurality of two-dimensionally arranged pixels on which electric charge is accumulated to generate signals (i.e., col. 4, lines 4+), respectively, capable of selectively reading out the signals from desired pixels (i.e., noted the selective reading of the desired pixels as shown in Figs. 6, 7, 16 and 17), and

a processor (i.e., the processor 10 as shown in Fig. 1) for light metering (i.e., noted the AE preprocess circuit 124 as shown in Fig. 1) read signals of given pixels located in a given area narrower than the whole imaging are of the image sensor (i.e., see Figs. 3 and 4), and

including a timer (i.e., noted the circuits 11, 12, 100 and 126) for determining a time information from a start of the accumulation of charge reaches a predetermined level (i.e., noted that the signals generators 11 and 100 of the camera provide a time period for reading the accumulation of charges form the frame A, B, C, E and D area of the image sensor as shown in Figs. 6, 7, and 16-17, and a predetermined level of exposure value is determined as shown in Fig. 14), the light metering being on the basis of the time information, such as a timing signals (i.e., as shown in Fig. 14, the predetermined level of the signals read from the specific area, e.g., the areas A, B, C, D or E, is used for AE control based on the time information generated by the timing circuits 11 and 100 of the camera; see col. 4 lines 25+, col. 11, lines 10+).

In addition, it is noted that Hieda '488 does not explicitly stated the use of a time length from a start of the accumulation of charge to a time when a signal from the image reaches a predetermined level, the light metering being on the basis of the time length as recited in present claimed invention.

However, the above-mentioned claimed limitations are well known in the art as evidenced by Yamaguchi '921. In particular, Yamaguchi '921 teaches the use of a timer (i.e., see Figs. 1 and 2, the elements 107/105) for determining a time length from a start of the accumulation of charge (i.e., noted that AE is performed with time length of 1/60 sec.; see col. 5, lines 45-50. Also noted the time length for accumulating the charges in the CCD sensor as shown in Figs. 3, 16A-16C, 17, 21, 24 and 27) to a time when a signal from the image reaches a

predetermined level (i.e., noted from Figs. 16A-16C, 17, 21, 24, and 27, the elements 107 and 105 are capable of determined a predetermined level of the CCD sensor exposure time, e.g., 1/60 seconds during the line thinning mode to perform the AE process), the light metering being on the basis of the time length (i.e., noted that the AE process is based on the 1/60 second of time length determined by the control units 107 and 105) as recited in present claimed invention.

In view of the above, having the system of Hieda '488 and then given the well-established teaching of Yamaguchi '921, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the system of Hieda '488 as taught by Yamaguchi '921, since Yamaguchi '921 stated in col. 2, lines 25+ such a modification would improve the display image on the monitor, and a period during which a display of a monitor disappears can be minimized.

Regarding claim 14, Hieda '488 discloses further comprising a focus detector for processing the signal of the image sensor to detect the focusing condition of the camera (i.e., see Figs. 2 and 13, col. 10, lines 40+).

Regarding claim 15, Hieda '488 discloses wherein the focus detector processes the outputs from the individuals of the pixels of the image sensor to form a digital image to be investigated in the focus direction (i.e., col. 7, lines 30+, col. 8, lines 45+, col. 10, lines 35+).

Regarding claim 16, Hieda '488 discloses wherein a range covering the pixels participating in the focus detection differs from that in the light metering (i.e., noted the different pixels areas B, C and D as shown in Figs. 6, 7 and 16 are used in AF and AE respectively).

7. Claims 4-14, 17-18, 22-23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al (U.S. 5,751,354) in view of Yamaguchi '921.

Regarding claim 4, Suzuki 354 discloses a digital camera (Fig. 1), comprising: an image sensor (i.e., the image sensing device 4) having a plurality of two-dimensionally arranged pixels on which electric charge is accumulated to generate signals (i.e., col. 7, lines 30+), respectively, capable of selectively reading out the signals from desired pixels (i.e., Figs. 10 – 12B; col. 12, lines 25+), and

a processor (i.e., the processors 7 and 9 as shown in Fig. 1) for light metering (i.e., noted the Exposure adjustment as shown in Figs. 2-9) read signals of given pixels located in a given area narrower than the whole imaging area of the image sensor (i.e., see Figs. 12A and 12B), and including a timer (i.e., noted the Timing Generator 5 and the CPU 10 functioned as a timer) for determining a time (i.e., the exposure time period of the image sensor 4) from a start of the accumulation of charge to a time (i.e., noted the Exposure time started for the sensor 4 to accumulate charges therein) when a signal from the image sensor reaches a predetermined level (i.e., noted the predetermined level of the charges accumulated under the control of the circuits 5 and 10 as shown in Figs. 10-11 and 12A-12B), the light metering being on the basis of the time (i.e., noted that the Exposure process shown in Figs. 2-9 is on the basis on the exposure time set by the timing circuits 5 and the CPU 10; see col. 12, lines 50+).

In addition, it is noted that Suzuki 354 does not explicitly stated the use of a time length from a start of the accumulation of charge to a time when a signal from the image reaches a predetermined level, the light metering being on the basis of the time length as recited in present claimed invention.

However, the above-mentioned claimed limitations are well known in the art as evidenced by Yamaguchi '921. In particular, Yamaguchi '921 teaches the use of a timer (i.e., see Figs. 1 and 2, the elements 107/105) for determining a time length from a start of the accumulation of charge (i.e., noted that AE is performed with time length of 1/60 sec.; see col. 5, lines 45-50. Also noted the time length for accumulating the charges in the CCD sensor as shown in Figs. 3, 16A-16C, 17, 21, 24 and 27) to a time when a signal from the image reaches a predetermined level (i.e., noted from Figs. 16A-16C, 17, 21, 24, and 27, the elements 107 and 105 are capable of determined a predetermined level of the CCD sensor exposure time, e.g., 1/60 seconds during the line thinning mode to perform the AE process), the light metering being on the basis of the time length (i.e., noted that the AE process is based on the 1/60 second of time length determined by the control units 107 and 105) as recited in present claimed invention.

In view of the above, having the system of Suzuki 354 and then given the well-established teaching of Yamaguchi '921, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the system of Suzuki 354 as taught by Yamaguchi '921, since Yamaguchi '921 stated in col. 2, lines 25+ such a modification would improve the display image on the monitor, and a period during which a display of a monitor disappears can be minimized.

Regarding claim 5, the combination of Suzuki 354 and Yamaguchi '921 discloses wherein the image sensor is further capable of adding signals of at least two pixels prior to getting the output from the image sensor (i.e., noted the mixed signals as discussed in col. 11, lines 43+ of Suzuki 354, and noted the use of time length of 1/60 sec. as taught by Yamaguchi '921), and wherein the timer determines a time length from a start of the accumulation of charge

to a time when the added signals reaches a predetermined level (i.e., see Figs. 10-11, col. 10, lines 40+ and col. 11, lines 25+ of Suzuki 354; noted the use of time length of 1/60 sec. as taught by Yamaguchi '921).

Regarding claim 6, Suzuki 354 discloses wherein the processor for light metering (i.e., the coarse adjustment of exposure as shown in Figs. 2-9) further comprises an output reader for repeating to get the outputs from the pixels (i.e., the noted the circuits 6, 7, 9 and 10 as shown in Fig. 1 for repeating to get the outputs form the pixels of the sensor 4 for performing the exposure correcting steps as shown in Figs. 3-9) in accordance with a predetermined timetable (i.e., noted the use of exposure time table as discussed in col. 12, lines 60-65 for repeating to get the outputs of the sensors during the exposure correction steps as shown in Figs. 3-9), and a comparator for comparing the signal with the predetermined level (as shown in Fig. 3, the CPU 10 and processing circuits 7 and 9 compares the signal with the predetermined level stored; see col. 12, lines 40-68), and wherein the timer (i.e., the circuits 5, 6 and 10 as shown in Fig. 1) determines a time length (i.e., noted the time period as shown in Figs. 10 and 11 of Suzuki 354, and noted the use of time length of 1/60 sec. as taught by Yamaguchi '921) from a start of the accumulation of charge to a time when the comparator informs that the added signals reaches the predetermined level (i.e., as shown in Figs. 2, 10 and 11, the CPU 10 and the circuits 5 and 6 are capable of determining a time period from the start of the accumulation of charge at the step S3 with diaphragm open to a time when the comparator informs that the added signals reaches the predetermined level as shown in the Steps S4 with the diaphragm closed; see Figs. 2-9 and col. 14, lines 50+).

Regarding claim 7, Suzuki 354 discloses wherein the predetermined level corresponds to the optimum exposure level of the camera (i.e., col. 12, lines 60+ and col. 15, lines 45+).

Regarding claim 8, Suzuki 354 discloses wherein the output reader repeats to get the outputs form the pixels with the charge accumulation continued without being reset during the period in which the timer is determining the time (i.e., as shown in Fig. 10, the output reader circuit 7, 9 and 10 repeated to get the outputs 2, 3 and 4 form the vertical transfer of the pixels with the accumulation continued without being reset during the electronic shutter period in which the timer circuits 5, 6 and 10 is determining the shutter time respectively; see col. 12, lines 30+).

Regarding claim 9, Suzuki 354 discloses wherein an interval between the repetitions of getting the output by the output reader is changeable among pixels (i.e., noted that the range finding areas is changeable among pixels as shown in Figs. 10-11, and 12A-12B; see col. 11, lines 25+ and col. 12, lines 25+).

Regarding claim 10, Suzuki 354 discloses wherein the output reader gives priority to a pixel of the shorter interval in getting the output (i.e., noted form Fig. 10, the shorter interval is reading first, thus, it is cleared that the shorter interval is given priority to get the output).

Regarding claim 11, Suzuki 354 discloses wherein the signals from pixels of the same interval are added prior to getting the outputs from the pixels (i.e., see Fig. 11; col. 11, lines 25+).

Regarding claim 12, Suzuki 354 discloses wherein an interval between the repetition of getting the output by the output reader is variable for changing a range of light metering (i.e., see Figs. 10-11 and 12A-12B, col. 11, lines 25+ and col. 12, lines 25+).

Regarding claim 13, Suzuki 354 discloses comprising an aperture (i.e., Fig. 1, the element 2) through which the image sensor (4) receives light, wherein the aperture is variable for changing a range of light metering (i.e., col. 14, lines 60-68).

Regarding claim 14, Suzuki 354 discloses further comprising a focus detector for processing the signal of the image sensor to detect the focusing condition of the camera (col. 16, lines 25+).

Regarding claim 17, the combination of Suzuki 354 and Yamaguchi '921discloses wherein the image sensor (4) is reset after the time length relating to the light metering to accumulate charge for the same period as the time length to get signals for the focus detection (i.e., noted form Fig. 4 that the sensor 4 is reset at steps S217 after the same time period relating to the Exposure adjustment and the Focus adjustment were performed at the steps S213 of Suzuki 354; and noted the use of time length of 1/60 sec. as taught by Yamaguchi '921).

Regarding claim 18, the combination of Suzuki 354 and Yamaguchi '921 discloses wherein the image sensor is reset (i.e., noted the resetting performed at the steps S217 of Fig. 4 of Suzuki 354) after the focus detection (i.e., Fig. 4, the steps S213 of Suzuki 354) to accumulate charge for the time length (i.e., noted the time period as shown in Figs. 10 and 11 of Suzuki 354; and noted the use of time length of 1/60 sec. as taught by Yamaguchi '921) calculated from light metering calculation (i.e., noted the Exposure calculation as shown in Figs. 4, the steps S213) to get signals for forming a picture image of an object of the camera (100).

Regarding claim 22, Suzuki 354 discloses comprising a white balance calculator (i.e., noted the white balance as shown in Figs. 4-8; see col. 16, lines 25+ and col. 19, lines 1-11) for processing the signal obtainable from the image sensor without resetting the image sensor after

the focus detection (i.e., as shown in Fig. 4, step S218, the sensor is reset at step S221 after the focus, exposure and white balance calculations are performed at step S218, thus, a white balance calculation is processed without resetting the image sensor after the focus detection).

Regarding claim 23, Suzuki 354 discloses wherein the image sensor is further capable of addition signals of at least two pixels prior to getting the outputs from the image sensor (i.e., noted the mixing of pixels as shown in Fig. 11; see col. 11, lines 40+), and wherein the white balance calculator processes the added signal (i.e., col. 12, lines 30+, col. 13, lines 25+, and col. 16, lines 25+).

Regarding claim 24, Suzuki 354 discloses comprising picture image processor for processing the signals (i.e., Fig. 1, the elements 7 and 9) from the image sensor (4) to form a picture image of an object of the camera (100) and a white balance calculator (col. 16, lines 25+ and col. 19, lines 1-12) for processing the signal obtainable from the image sensor (4) without resetting the charge accumulated on the image sensor for the picture image (i.e., as shown in Fig. 4, step S218, the sensor is reset at step S221 after the focus, exposure and white balance calculations are performed at step S218, thus, a white balance calculation is processed without resetting the image sensor after the focus detection).

8. Claims 27 and 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kijima '451 in view of Masaki (Translation of JP 11-344662).

Regarding claim 27, although Kijima '451 shows the focus detector including an optical system (40) for forming an image of an object on the image sensor (12) and an aperture (44) for

passing light flux of the optical system (40) respectively, Kijima '451 does not explicitly show a pair of apertures and filters each arranged across the divided light passing through the pair of apertures as recited in the present claimed invention.

However, the above-mentioned claimed limitations are well known in the art as evidenced by Masaki '662. In particular, Masaki '662 teaches the use of a pair of apertures (i.e., see Fig. 2, the diaphragm 102 has a pair of holes 102a and 102b) and filter (i.e., noted the diaphragm 102 is arranged G filter 102a and M filter 102b as shown in Fig. 2; see paragraphs 0023+) each arranged across the divided light passing through the pair of apertures (102a/102b) as recited in the present claimed invention.

In view of the above, having the system of Kijima '451 and then given the well-established teaching of Masaki '662, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the system of Kijima '451 as taught by Masaki '662, since Masaki '662 states in the abstract that such a modification would offer the AF equipment of the camera with high-speed focus actuation.

Regarding claim 28, the combination of Kijima '451 and Masaki '662 shows wherein the image sensor is color image sensor having read, green and blues pixels (i.e., see Fig. 2 of Kijima '451; and noted the R, G, B sensor 103 of Masaki '662) and wherein the filter arranged across the divided light fluxes are green and magenta filters (i.e., Fig. 2 of Masaki '662), respectively.

Regarding claim 29, the combination of Kijima '451 and Masaki '662 shows wherein the image sensor receives light through the pair of apertures on the light metering (i.e., it is noted that the aperture pairs as taught by Masaki '662 obviously can be used in the AE system of

Kijima '451 because the exposure of the image data captured by the sensor 103 in the camera system of Masaki '662 has to be corrected while using a pair of apertures).

9. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kijima '451 in view of Masaki '662 as applied to claims discussed above, and further in view of Sunao et al. (Translation of JP 09-184973).

Regarding claim 30, the combination of Kijima '451 and Masaki '662 does not explicitly shows an another aperture through which the image sensor receives light, wherein the pair of apertures are replaced by the another aperture for changing a range of light metering as recited in present claimed invention.

However, the above-mentioned claimed limitations are well known in the art as evidenced by Sunao '973. In particular, Sunao '973 teaches the use of another aperture through which the image sensor receives light (i.e., see the aperture other than 2a and 2b as shown in Fig. 3), wherein the pair of apertures (2a/2b) are replaced by the another aperture for changing a range of light metering as recited in present claimed invention (i.e., see paragraphs 0018+).

In view of the above, having the system of Kijima '451 and then given the well-established teaching of Sunao '973, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the system of Kijima '451 as taught by Sunao '973, since Sunao '973 states in the abstract that such a modification would offer the AF equipment of the camera with quick focusing without necessitating a sensor used only for focusing on a subject.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. Ishigami '291 and Udagawa '781 shown an imaging device having AF, AE and AWB correction means thereof.

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aung S. Moe whose telephone number is 571-272-7314. The examiner can normally be reached on Mon-Fri (9-5).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy Garber can be reached on 571-272-7308. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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A. Moe
April 3, 2005